A DESCRIPTION OF THE MALE OF *SYMPHEROBIUS ARIZONICUS* BANKS (NEUROPTERA: HEMEROBIIDAE)

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The genus *Sympherobius* Banks, 1904, is represented in the Nearctic Region north of Mexico by seventeen rather well-defined species. All but two of these were treated in detail by Carpenter (1940) in his revision of the Nearctic Hemerobiidae, while the remaining two species have been described more recently by Gurney (1948) and Nakahara (1960). Unfortunately, as the species *S. arizonicus* Banks and *S. pictus* (Banks) have been known only from females and as Nakahara's *S. stangei* was described from a single specimen lacking an abdomen, information concerning the taxonomically important structures of the male genitalia of these species has remained unknown. Recently Mr. John B. Ward of the University of Arizona has collected and forwarded for study a series of female specimens accompanied by males which he felt belonged to *S. arizonicus*. A comparison of Mr. Ward's specimens with the female type of this species shows the correctness of Mr. Ward's identification so it now becomes possible to supply a portion of the missing taxonomic information on our species of this genus. The author is indebted to both Mr. Ward and to Dr. F. M. Carpenter of Harvard University for the privilege of studying this material.

The following descriptions are based on specimens of *S. arizonicus* collected at Tuscon, Arizona, in November, 1961, and February, March, April and May, 1962. Male and female specimens of this species are being deposited in the Museum of Comparative Zoology, Harvard University, and in the U.S. National Museum, Washington, D. C.

Description of body pigmentation (based on three male and seven female specimens, all pinned) — Face with frons, clypeus and labrum tannish yellow and with a rather wide, dark brown interantennal mark extending about one-half way from lower rim of antennal fossae to epistomal sulcus; frontogenal and epistomal sulci brown, nearly black; genae medium to dark brown, this color extending as far anteriorily as the frontogenal sulci; vertex dark brown; antennae with scapes dark brown above, light tan beneath; pedicels and flagella nearly black. Pronotum nearly black with small area of light grey on lateral margins; meso- and metanota black; plurae medium brown; legs and abdomen brown.

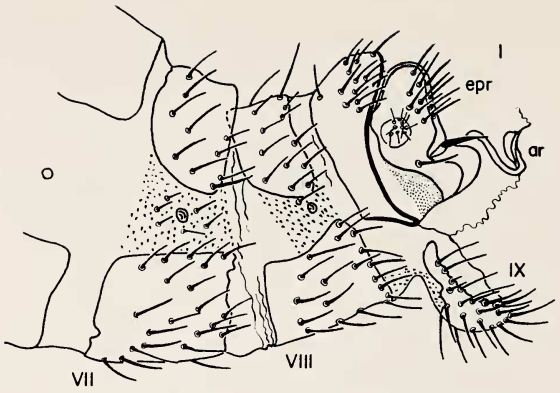
The markings of the female holotype differ only in being somewhat

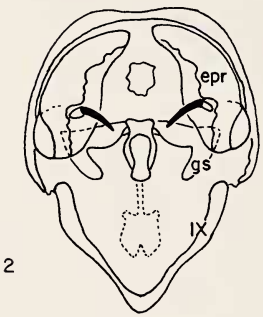
lighter, which is due principally to the rather greasy condition of the specimen. The interantennal mark and the pale undersurface of the antennal scapes are both visible with only slight difficulty in the type. The wing venation and maculation of the new specimens depart in no significant regard from the condition found in the holotype and described and figured by Carpenter (1940) except that the gradates and other cross veins have a narrow fuscous margin, this being particularly evident with the two lower inner gradates and the MP-CuA cross vein.

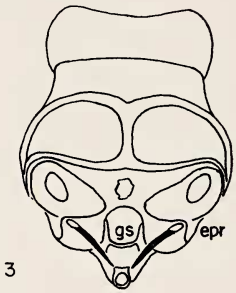
Description of abdominal terminalia (based on three male and four female specimens, cleared and in glycerine) — Male abdomen (Pl. 6) with segments one through eight showing no unusual specializations. Ninth tergite ventrally produced and ending in a sharp posteroventrally projecting point; posterior and ventral margin with a darkly sclerotized rim; ninth sternite (Pl. 6, Fig. 1, 2, 6; IX) forming the usual subgenital plate characteristically present in *Symplherobius,* projecting a little beyond posterior margin of ectoprocts[1], broadly membranous dorsally, and appearing as a nearly equal-sided triangle when seen from above (Pl. 6, fig. 6).

Ectoprocts as in Pl. 6, fig. 1, 2, 3 (epr), consisting of a somewhat dumbell-shaped, darkly sclerotized central area bounded by a more transparent area anteriorly and posteriorly; the dorsally sclerotized portion with the usual callus cerci bearing about ten trichobothria, the ventrally sclerotized portion below the constriction much smaller and somewhat convex, this convex lobe continuing posteriorly and anteriorly into the unsclerotized areas of the ectoproct; anteriorly, this lobe is covered by numerous regularly arranged fine punctations in the nearly transparent cuticle before the sclerotized ventral portion of the ectoproct; a single very dark, posteriorly directed spine arises from a paler linear basal plate in the constricted region of the sclerotized area of the ectoproct. Gonarcus (Pl. 6, fig. 2, 4, 5 gs) narrowed posteriorly in lateral view with a large, ventrally directed portion (entoprocessus of Tjeder's terminology) near the anterior end; arcessus (Pl. 6, fig. 4, 5 ar) rather thick in lateral view, beset beneath with numerous small microtrichiae. Parameres (Pl. 6, fig. 6, 7 pa) fused for nearly their entire length, separate only posteriorly, with the tips of the anteriorly directed middle arms unexpanded and with the fused portion showing little or no indication of a tooth in lateral view.

[1]The terminology used to describe the genital structures is that of Tjeder (1954).







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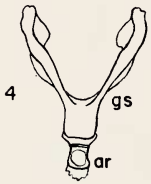

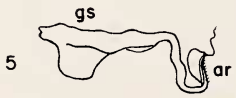

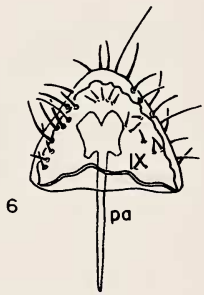

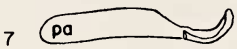

MACLEOD — SYMPHEROBIUS

Female abdomen of the usual type for *Sympherobius* with the subgenitale only slightly bifurcate posteriorly and with the small stylus of the gonopophysis lateralis twice as long as broad.

S. arizonicus clearly belongs to what Gurney (1948) has termed the *perparvus group* of Nearctic species which also includes *S. perparvus* (McLachlan), *S. killingtoni* Carpenter and *S. beameri* Gurney and which are all characterized by the presence of a single spine on the ectoproct and a close similarity in the form of the gonarcus and parameres. *S. arizonicus* differs from all of these in that the spine of the ectoproct is nearly straight and arises from a small linear basal plate from which the spine proceeds directly posteriorly rather than first arching dorsally. In addition, the other three species of this group have a rather triangular outline to the lateral wings of the gonarcus when seen in lateral view, while *S. arizonicus* has the wings of the gonarcus produced ventrally at the anterior end only and is abruptly narrowed posteriorly. The parameres of *S. arizonicus* are somewhat intermediate between *S. killingtoni* and *S. perparvus,* but lack the conspicuous tooth of the fused portion visible in lateral view. Gurney's Plates II and III should be consulted for a summary of these characters as found in the other three species of the *perparvus group.*

In terms of non-genitalic characters, the key of Carpenter (1940) will suffice for the proper identification of the males of *S. arizonicus* as the distinctive pattern of wing maculation is quite different from any of our other species, although coming closest to the maculation pattern of *S. killingtoni.*

Literature Cited

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Explanation of Plate 6

Sympherobius arizonicus Banks, ♂ terminalia. Fig. 1, lateral aspect of tip of abdomen. Figs. 2 and 3, postero-dorsal and dorsal aspects of tip of abdomen. Figs. 4 and 5, dorsal and lateral views of gonarcus. Fig. 6, dorsal view of ninth sternite with parameres within. Fig. 7, lateral view of parameres. Scale for all figures as indicated.

Abbreviations: ar, arcessus; epr, ectoproct; gs, gonarcus; pa, parameres VII-IX, abdominal segments seven-nine.